

**WPAFB
Educational
Outreach Office**

W.O.W! Words

Volume 1, Issue 1

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Special points of interest:

- Looking for a GREAT resource? Tune into LabTV
- High School Teachers rejoice—here's a demo just for you!
- TechFest 2010—February 13 & 14.
- Next Newsletter—March 1, 2010

WPAFB Educational Outreach welcomes new W.O.W! Program Manager

August 31, 2009 marked a change for the WPAFB Educational Outreach Office. Joining the ranks of the EO office is Krista Gerhardt.

Krista brings to our office, twenty years of classroom experience. As a middle school science teacher, Krista's enthusiasm and passion for learning, afforded countless opportunities to develop professionally. From digging fossils to exploring microgravity, Krista's professional development experiences were incorporated into engaging lessons for her 8th grade science students.

Serving as the W.O.W! Program Coordinator, Krista has grand plans for the Wizards of Wright. Utilizing the multitude of resources from the EO office and the talents of WPAFB men and women, the W.O.W! program is being taken to new heights. Krista will be visiting those classrooms that schedule demonstrations, familiarizing herself with each and every demonstration. This allows Krista to work her magic and provide teachers with additional materials to extend the W.O.W! experience. Goals of increasing the number of scheduled demos will produce need for more W.O.W!

wizards. Establishing a regular means of communication (i.e. W.O.W! Words), allow teachers the opportunity to know the latest events, fostering partnerships with our EO office and the educational community.

Krista welcomes teacher input.

What would you like to see from the W.O.W! Program? E-mail krista.gerhardt@wpafb.af.mil

Your suggestions and comments will be helpful in developing new demos for K-12 classrooms.



Left to right—Bob Gemin, Kim Stultz, Krista Gerhardt and Kathy Levine

TIE Conference—Teachers, Industry, and Environment

W.O.W! Program Manager, Krista Gerhardt had the opportunity to attend the 17th Annual Teachers, Industry, and Environment (TIE) Conference October 14-16, 2009.

This 2 1/2 day professional development opportunity is presented annually by the Ohio Chemistry Technology Coun-

cil's (OCTC) Education Foundation for elementary and middle school science teachers to help bring chemistry into the classroom. A collaborative effort by the OCTC and its member companies; the Ohio Environmental Protection Agency, Science Enhancement for Science Advancement (SESA), and Miami University,

TIE gives teachers the opportunity to experience first-hand, real world environmental challenges, and how they are being addressed by the entire scientific community. Fun and exciting experiments were presented by engineers, scientists, educators, and technical experts from both the private and public sectors.

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Wizard Spotlight— Bob Gemin

Those of you familiar with the WPAFB Educational Outreach Office, realize the extent of programs available to teachers and students. The success of these program would not be possible without the support and technical expertise of Bob Gemin. From Robotics to Wright-STEPP, Science Fairs and Wizardry, Bob is EO's "go to guy"!

Bob uses his time and talents to enhance all aspects of the outreach program. He supports the managers for the many educational programs. Bob assists STARBASE with repair, design, and building of educational systems. He serves as the Robotics Technical Director, providing hardware, designing event layout, and coordinating building and setup for the FLL tournaments.

Bob Gemin's commitment to young people is to be admired. He is one of W.O.W!'s busiest wizards, specializing

in "Electricity and Magnetism", "Magnets and Motors", and "Making a Motor from an Aluminum Can" demonstrations.

This time of year, Bob can be found mentoring students for Science Fairs and loaning sophisticated research equipment to high school students via student requests.

Did you know? Bob Gemin holds and Bachelor Degree in Electrical Engineering, a Master of Science Degree, and is a Licensed Professional Engineer. His work at

WPAFB includes notable achievements. Bob was the lead engineer for a very complex air data computer program that was the leading standardization program of its time and also the avionics "chief engineer" for the Peach Marble F-16s, T-1, and T-6.



Bob with the Van de Graff working his "wizardry"!

Many of you are well aware of the time and commitment Bob gives each and every day. Chances are if you have scheduled a W.O.W! demo you have seen him in action. Bob is an invaluable resource to all of us here in the WPAFB Education Outreach Office. Here's to you Bob Gemin!—thank you for sharing your personal and professional integrity each and everyday.

Wiz Stuff

WPAFB Education Outreach Office is very fortunate to have variety of "toys and gadgets" to enhance the classroom experience. Included in our toy chest

- Climate Model
- Infrared Camera
- Gyroscopic Toys
- Rock Kits

just to name a few...

Coming soon to a classroom near you!

W.O.W! plans to make these materials available by developing new demonstrations. The demonstrations will allow the Wizards to bring the equipment to your classroom for student use.

W.O.W! Words will keep you posted on release dates and availability of the new demonstrations.



Upcoming Events

TechFest February 2010

Is scheduled February 13 (10AM-6PM) and February 14 (11AM-5PM) at Sinclair Community College, Bldg. 12

The Affiliate Societies Council of the Miami Valley will host the 8th annual TechFest program designed to get K-12 students interested in STEM subjects through hands-on exhibits and entertaining presentations.

Events for teachers include workshops of-

fered on Saturday to help incorporate STEM activities in your classroom curriculum. One of the workshop topics is Fuel Cell Technology presented by Krista Gerhardt of the EO office.

Join the W.O.W! wizards and many others for a great day of hands-on activities and demonstrations.



Job Shadow March 2010

Do you know a high school junior or senior interested in learning about the many exciting careers available at WPAFB? Mark your calendars—Wednesday, March 24, 2010 is the day for just that! Interested students will need to apply. Watch your email and the EO website for additional information in early February.

What's New?

(Continued from Pg. 1)

Joining a group of 46 other educators, Krista participated in the intensive, 2 1/2 day program focused on creative approaches to teaching principles of physics, chemistry, and life science to students. The conference opened with an overview and behind the scenes tour of ISP Columbus. Thanks to tour guide, Tony, the ISP visit was not only informative, but educational. Seeing science applied in the industrial setting reinforces why science educators take the extra effort to provide students with the process skills and content required to excel in the workforce.

Over the next two days, scientists from industry, universities, and Ohio's EPA demonstrated experiments that can easily duplicated in classrooms. From household items to inexpensive toys, Michelle showed us all,

that teaching the principals of chemistry can be affordable even on the strictest school budget. With great pre-packaged materials, Hank and Karl presented their density activity. Dennis and Carolyn reinforced the importance of our local waterways by looking at river pollution and stream sediment. They provided a great resource for turbidity tubes. The gals from LyondellBasell provided the materials necessary to explore the science of polymers with our students.

Highlights of the conference included Captain Green's Time Machine. This interactive, multimedia chemistry demonstration illustrated the history and science of climate change. Not to be upstaged by the "Balloon Boy" Hank and Karl took to the stage with their liquid nitrogen activities and treated all participants to ice cream!

Thanks to Mr. Jere Ellison at ISP Columbus who made my attendance at the 17th annual Teachers, Industry, and Environment Conference possible. My TIE experience was most rewarding! The conference was well organized, worthwhile and very practical for classroom teachers. Armed with TIE materials and resources, I am equipped to share the excitement of science!

Those interested in attending next year's TIE Conference should check out

www.ohiochemistry.org

Aerospace Propulsion Outreach Program— Kat Lyons

AFRL's Propulsion Directorate launched the Aerospace Propulsion Outreach Program (APOP) to target our nation's critical shortage of new engineers. Dedicated volunteers from the Junior Force Council visit local Middle and High Schools, using aerospace propulsion to increase student interest in STEM-related careers. APOP combines an interactive multimedia presentation with the demonstration of a miniature jet engine. The material length can be adjusted from 1 to 3 hrs to mesh with school schedules, and a less technical version is available for younger students. In addition, APOP is willing to coordinate with teachers to incorporate related concepts in the course curriculum.

Topics from the presentation include Newton's 2nd Law, Engine Components, Overall Jet Engine Operation,

Computer Analysis, Mach Number, Engineering Design, Manufacturing, Materials Technology, and Rockets. The slideshow is video- and graphic-intensive to capture student attention, and presenters hand out turbine blades and carbon composite samples for the class to better visualize engine components and material properties. Due to APOP's interactive nature, a classroom setting is preferable to an auditorium or lecture hall. Volunteers can schedule repeat visits if a school wishes multiple classes to participate in APOP.

APOP is not limited to schools; the presentation can be modified for summer programs, seminars, or extra-curricular clubs. If you are interested in hosting APOP or would like additional information, please contact Lieutenant Kat Lyons at (937)255-7226 or **kathryn.lyons@wpafb.af.mil**



LabTV Tickles Science and Math Interest

Aimed squarely at Generation

YouTube, LabTV presents an insider's view of everyday work undertaken by DoD scientists and engineers. Fast-paced and succinct, LabTV showcases an astonishing breadth of research, from dolphin training, to high-tech gloves for large groups of moon-walking astronauts, to turning banana peels into fuel. Each video encourages young students with an initial interest in math and science to

continue their education and, perhaps, consider a technical career at a Defense Laboratory.

If you thought LabTV wasn't cool enough—Currently on the drawing board: NDEP is partnering with the National Center for Technological Literacy at the Museum of Science, Boston to develop a searchable database to cross reference each webisode by subject area and against national science and math standards. This feature should

launch in Spring 2010.—NDEP

To our delight, LabTV filmed last spring's FIRST Lego League U.S. Open Championship held at Wright State University's Nutter Center. The webisode can be viewed at **www.ndep.us/LabTV.aspx** click on Season Two—*Lego Champs*.

Each W.O.W! Words newsletter will highlight an episode that has been previewed. The EO office will make the classroom connections and offer implementation strategies.

Next issue—*Brainwaves*

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Our Mission: *To facilitate partnerships with the K-12 educational community to increase student awareness and excitement in all areas of science, technology, engineering and math (STEM) and related careers!*

Wright-Patterson Air Force Base, near Dayton, Ohio is one the nation's most important military installations. The base is headquarters for a vast, worldwide logistics system and is the foremost research and development center in the U.S. Air Force. Steeped in tradition, WPAFB has been a leader in military aviation development from the time of airplane inventors Wilbur and Orville Wright, who lived in Dayton, to today's aerospace age.

The Wright-Patterson AFB Educational Outreach Office was established in 1999 to share the base history, experience and capabilities with the K-12 educational community through internal programs, partnerships and individual involvement.

It is the only program of its kind within the Department of Defense!

D.I.Y. (do it yourself) Science - Krista Gerhardt

Fun with Packing Peanuts—

As a former 8th grade teacher, I often enjoyed throwing something a little different out for the students. After receiving shipping packages from the holidays, I found myself with an abundance of packing peanuts. The variety of peanuts varied from one shipper to the next. Different shapes, sizes, colors, biodegradable, and non-biodegradable made up the assortment.

Knowing these wonderful peanuts would make a great exploratory activity, I began to bag. With all the packing peanuts neatly zipped into sandwich bags I toted them to school.

Challenging the students to design their own experiment, I tossed baggies on to tables. I did have a few takers. Ah, the reaction of those students that accepted the offer to explore at home! They quickly learned the difference between many of the peanuts and concluded that not all peanuts are created equal. Imagination and creativity were evident in many of the tests performed with the packing material.

It wasn't until I worked HERE in the WPAFB Educational Outreach Office did I ever see someone eat packing peanuts. Yes, you heard right! My colleague, who

will remain anonymous, munched away on the crunchy material as if it was some tasty treat. Horrified in what we just witnessed, my co-workers and I started asking questions. We discussed our knowledge with grain based products and the feasibility of feeding the masses. So, what did we do? We all tried one, okay maybe two. We even got a Colonel to partake in our taste test. We all agreed the grain-based peanuts are similar to any cheesy puff corn product just minus the cheese.

So, with all that said—I began my research. Carolina Science Supplies calls their environmentally friendly packing material PuffNs. Carolina has developed a series of interesting classroom activities using PuffNs. The 11 activities range from K-8 and include topics like mass, volume, density, glucose testing, and starch presence. Check it out at www.carolina.com/puffns. **FYI** Carolina Science Supplies does **NOT** recommend EATING PuffNs.

Next issue—Air Pressure



Cornstarch packing peanuts in a variety of colors